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# GENTES HERBARUM

(The Kinds of Plants)

By L. H. BAILEY

7–10. Various Botanical and Horticultural Problems

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FIG. 87. CALYPTROSTIGMA MAXIMOWICZII.—A weigela-like shrub of Japan.

# VARIOUS BOTANICAL AND HORTICULTURAL PROBLEMS

The contents of this fascicle of miscellanies are ranged under four heads:

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Article 8. Three discussions in Cucurbitaceæ, page 175
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Before considering these technical discussions, however, we may pause with an approach to the subject of the interrelation of systematic botany and horticulture. One wishes all botanists might be at least amateur horticulturists and that all horticulturists were desirous botanists. It would be a happy world.

### *The Fear of Cultivated Plants*

The subjects discussed in this paper are largely associated with cultivated plants. Systematic botanists appear to have a fear of such plants, on the assumption that they are so endlessly variable and so extensively hybridized that ordinary tenets of botanical diagnosis do not hold amongst them. This fear is mostly groundless and it largely disappears, as do other bugaboos, when one studies the cases.

To be sure there is wide variation in cultivated plants, but (outside certain ancient groups) usually no greater or more inexplicable than one meets in any number of wild subjects. The variations are largely in stature, size, doubling, and color, and the usual critical characters on which the botanist depends for diagnosis of species commonly remain intact. One soon learns what allowances to make for variation due to cultivation, as one also comes to assess the modifications associated with latitude, altitude, soil, habitat, in feral plants; in fact, the variations are mostly less puzzling than those of similar degree in wild variables because one is aware of the circumstances behind them. The botanical characters of *Helianthus annuus* hold well in the many cultivated forms if one is not misled by stature, doubling, and the like. The many races of carnations, indoors and in the border, still fall readily into the botanical diagnosis of *Dianthus Caryophyllus;* there is no difficulty in recognizing the calyx, the floral bracts, the flower-bearing habit, the glaucous foliage, and also the characteristic fragrance. The peach is still *Prunus Persica*, readily recognized by all the botanical marks of foliage, flowers and flower-bearing, stone, in spite of the fact that the pomological varieties of it are described

in the hundreds. The American cultivated blackberries remain mostly inexplicable but this is because the wild native forms are yet so little understood; and similar remarks may be made of any number of cultivated groups; one can hope to comprehend Gossypium only by coordinate study in wild nature and in the cotton-field.

In fact, in a comprehensive monography of any genus the feral and domestic members should be studied together, if the cultivated forms or species are notable. This is essential to an understanding of the genus. In no other way can sufficient evidences be assembled and presented or the course of variation comprehended. Such combined studies are particularly important to horticulture, for the monographer is naturally the most competent person to express an opinion on the group. Studies of horticultural material alone are specially liable to be faulty; and the inclusion of such material should do much to relieve formal systematic monographs and to lend them a touch of human interest.

There is a troublesome opinion abroad that the present cultivated plants are inextricably hybridized, as if the species or botanical sources are commonly blended. This notion lacks foundation. There are many groups, of course, in which hybridity has wrought marked havoc, but these cases are known or soon disclose themselves. Usually there is recorded history behind them. If one is dealing with certain groups of orchids one goes to the "stud-books" where the commixtures are extensively recorded, but it does not follow that all horticultural orchids are hybrids. If a botanist studies Hemerocallis he learns at once both from the plants and the literature that he must be prepared for hybrids; if he studies the related genus Hosta he does not find such ready evidences. Many of the plants extensively crossed in cultivation also hybridize in wild nature, as the willows.

Even in the case of hybrid groups one is usually surprised, on careful study, to find how readily the parental traits and botanical characters still remain and can be traced. This is true even in the highly hybridized florists roses. The mendelian and other studies have taught us to look for somewhat predictable break-ups in the seed produce of hybrids, yet the supposed crosses that are habitually propagated by seeds may not show dominants and recessives; and the question then arises whether the group is in fact of hybrid origin. Not all the puzzling variations in domestic plants are proximate hybrids. One must be careful not to accept the "hybrids" of the horticultural trades too confidently. Many of the marked departures in cultivated plants are probably straight mutants, whatever that may mean.

The difficulty is that we are in the habit of dismissing cultivated plants as all mixed up by hybridization without even a good look at them. Or, when they cannot be understood we eliminate them as hybrids. Specimens

of domestic plants may not be desired in the herbarium. This attitude of course puts them at once beyond the hope of study, and it accounts for most of the disorder in which the systematology of cultivated plants has lain. There are hybrids, but we are not to assume them without evidence; and the evidence appears only on investigation. Hybridity is objective, not an assumption. The investigation must go much deeper than field observation and gross morphology.

Plants that were once easily despatched as hybrids have proved, on investigation, to be good natural species. Thus, for more than a generation the flower-garden *Cosmidium Burridgeanum* has passed as a bigeneric hybrid (Thelesperma × Coreopsis), but S. F. Blake now finds it to be a species native in Texas and has given us the accredited binomial *Thelesperma Burridgeanum*. Several important crop plants that are commonly assumed to be hybrids because we do not know any other way to explain them will probably prove to be independent species when the earth shall have been carefully botanized.

These remarks about hybrids have nothing to do, of course, with the speculative or philosophical question as to whether species of plants, or the organic series, originated from the crossing of aboriginal stocks. That theory of the means of evolution is to be determined on its own evidence, when the evidences shall have accumulated.

The binomials of horticultural groups are likely to be unfamiliar and perplexing to the systematist, yet he should be the first to understand them inasmuch as other persons may not be competent. Because systematists have neglected them is one reason why they are confusing. These names, like others, have histories and reasons. Sometimes they are the result of wrong determinations in the beginning, before the plants were catalogued and sold: identification of cultivated plants should be particularly careful and exact to avoid this kind of error, for mistakes cannot be overtaken and corrected as readily as with wild plants. Sometimes the names result from the shifting of labels and the carelessness of growers; sometimes from the unfortunate practice of giving binomials to minor forms and variations, a custom that would be largely avoided if adequate instruction in the elements of systematic botany were provided in high-schools and colleges. Often these horticultural binomials run back into significant and interesting records of information, discoveries, introductions, and breeding.

A basic trouble is the fact that we have no consistent and adequate records of cultivated plants. Names in lists and catalogues and in the press are not real records because the identity of the plant to which they are supposed to apply may not be known. The competent record is the herbarium specimen of the plant, discriminately taken and ticketed: relatively few of these records exist. Here is a major defect. We make

careful herbarium record of the small variations in wild plants, even to color races, but neglect more marked and important ones in cultivated plants. We preserve in libraries and archives every fugitive scrap that may have incidental historical interest to mankind, every fragment from archeological remains, every variation in postage stamps and coins, minutest records of persons and events; yet the kinds of plants that add resource to numberless people and stimulate satisfactions, and that might be capable of disclosing the origin and course of phenomena, are allowed to come and pass so obliviously that generations may have no exact knowledge of them and old achievements and old errors need constantly to be repeated. The good garden or farm is a fascinating botanizing ground.

It is shocking that we so frequently approach cultivated plants in an unscientific attitude. It is essential that we learn to take them without prejudice. These plants may be difficult, but that is no reason for neglecting them. The botany of cultivated plants requires the same careful approach as that of wild plants, and it should not be left to the cultivator. Yet I doubt whether they are inherently more inexplicable than wild plants, taking them as a whole. I should expect as satisfying rewards in the study of most of them as I would in the Paniculata group of Aster, in Crataegus, native American Vitis, the Ovales section of Carex, in Artemisia, Prunus, Erophila, and any number more. One must have a basis of judgment on them as on any other class of cases, make good botanical specimens, and one ought to grow them; one will be obliged to consult a special line of literature and be prepared to understand it; but the subject is straight systematic botany for all that.

There are two great classes of cultivated plants. (1, archeophytes). Those that are completely domesticated. These plants have mostly accompanied man so long that they go far back of dependable history. For the most part the nativities are unknown. The evolution of them as human companions goes back into archeology if in fact not sometimes into geology. We do not have definite beginnings or "types" of species. Here belong wheat, rye, apple, pumpkin, chrysanthemum, cabbage, orange, date, and others. Our "species" representing them are cultigens,—*Triticum æstivum*, *Secale cereale*, *Pyrus Malus*, *Cucurbita* of two or three classes, *Chrysanthemum morifolium*, *Brassica oleracea*, *Citrus sinensis*, *Phœnix dactylifera*. This group includes plants of special difficulty, and therefore of absorbing interest to the systematist.

The other class (2) comprises the plants less anciently associated with man, mostly less widespread in cultivation, and more readily identified with a wild prototype. Often the beginnings of marked variation, if in fact not of the actual introductions of the species to cultivation, are matters of record. It follows that one may see through the problem more assuredly then in the aboriginals of the other class.

In the study of cultivated plants the systematic botanist misses the element of nativity, range and habitat. This lack is at first confusing. One does not know where to begin or what reference literature to consult, and the writing may not have the orderliness that one associates with systematic record. One hesitates at first if the "origin" is not evident, although we really know little or nothing about origins of any species: usually we mean nativity when we speak of origin. Often the literature is more difficult than the plants. One soon acquires the method of approach, however, and comes to depend on the characters of the plants themselves rather than on extrinsic considerations. A close personal knowledge of cultivated plants as they grow in gardens and fields regulates the judgment on the values to be assigned to variations. The confusing horticultural nomenclature then begins to organize itself and to lose its terrors. It is strange as between horticulturists and botanists that each regards the plant-names of the other with distrust, even though the plants are the same.

In many or most of the ancient groups of high modifiability it is hardly to be expected that any two independent industrious workers will arrive at the same conclusions on the systematic positions of species, varieties and races; but such disparity is not peculiar to cultivated plants.

The literature of cultivated plants is voluminous, and still the critical writing on the systematology of them is really meager beyond the range of trees and shrubs and certain special groups; yet the highest horticulture and the best plant-breeding are impossible without careful identification of species. Moreover, identification is a primary element in good education of young and old, whether of plants, birds, stones or emotions. Cultivated plants are the readiest objects with which to begin such education in home and school; to this end the identity of them should be at least as well understood as of the native plants.

It is also time that all of us begin to be prepared for the new and more fundamental studies of the origins of domestic plants and of the physiological nature of their plasticities. This general field will become one of the large botanical adventures, with marked redirection in method and mode of attack. We shall be surprised at the novelty of the subject; a good working knowledge of systematic values will be necessary to the enjoyment of it.

# ARTICLE 7. SEVERAL ARRANGEMENTS OF NAMES NECESSITATED BY RECENT STUDIES

Among questions on the identity of cultivated plants that have recently required decision are certain ones involving suggestions as to nomenclature. They are here discussed as follows:

The edible chrysanthemums, p. 164
Calyptrostigma, p. 164
The asparagus lettuce, p. 165
The case of Eugenia Hookeri, p. 168
An introduced Cryptocarya, p. 171

## The Edible Chrysanthemums

A potherb vegetable has been introduced in North America under the names Shungiku and Chop Suey greens, apparently from Chinese sources. It is *Chrysanthemum coronarium* var. *spatiosum*, Bailey in Gentes Herbarum, i, 47, fig. 17 (1920). It has some of the marks of *C. segetum*. It may merit separation as a species when further studied. The herbage of these young plants is eaten by the Chinese. I have seen fresh bundles of the little tufts in markets in China. It is a glaucous robust and very leafy plant, 2-2½ feet high, with the large leaves not dissected or deeply divided as in *C. coronarium* and without the bipinnatified character of that species; the apical part of the leaf is expanded and relatively little lobed. I have grown it at Ithaca. Its origin is unknown to me; perhaps a cultigen; if ever derived from *C. coronarium*, the departure has become wide. In the plants I have gathered and grown, both of *C. spatiosum* and *C. coronarium*, I have not seen intergrades.

The edible chrysanthemum of Japan, as I have grown it under the names Shiyungiku, Shungiku, Kikuna, is *Chrysanthemum coronarium*.

## Calyptrostigma

In publishing on the Diervillas and Weigelas as separate genera in Fascicle I of Volume ii of Gentes Herbarum (February, 1929) I left the case of Calyptrostigma in abeyance as to enumeration of species. The recognized species appear to be two, although one of them has not been formally named in Calyptrostigma as far as I know. Diervilla is wholly east-American; Weigela and Calyptrostigma are east-Asian. The distinctions between Calyptrostigma and Weigela are specially in the very different fruits and in the calyptrate stigma and connivent anthers about the style of the former (see p. 45). The original species of Calyptrostigma is *C. Middendorffianum*. The second species is elevated from a varietal

status in the genus Diervilla by Makino in the Journal of Japanese Botany in 1917 (which is a different serial from the Japanese Journal of Botany) as *D. Maximowiczii*. Through the courtesy of Professor B. Hayata I have a photograph of an authentic specimen of *Maximowiczii* and it is reproduced in Fig. 87. Both species are in botanic gardens and are likely to appear in other gardens in North America although the group is said to thrive less freely than the Weigelas. They are hardy bushes. I find that *Maximowiczii* is sometimes confused in cultivation with *Middendorffianum*. We may now contrast them.

*Flowers mostly pedicellate, 2 to several in cymes terminal on main or lateral branchlets; corolla abruptly contracted into a short tube that is covered in the deeply cleft calyx, yellow with spots in the lower segments, the ovary short-contracted above: capsule somewhat fusiform* (Fig. 25).

**Calyptrostigma Middendorffianum,** Trautv. & Mey. Florula Ochotensis, 46, t. 25 (1847).

*Weigela Middendorffiana*, Fisch. in Trautv. & Mey. l.c.; Verschaff. in Illustr. Hort. iv, t. 115 (1857).

*Diervilla Middendorffiana*, Carr. Rev. Hort. xxv, 506 (1853), xxvi, 261, fig. 14 (1854).

*Wagneria Middendorffiana*, Verschaff. in Illustr. Hort. iv, p. 1 (1857).

Eastern Siberia, Manchuria, northern China, Japan.

*Flowers sessile or nearly so, axillary on growths of the season or sometimes twin at the apex: corolla very gradually narrowed into a slender tube that is evident above the spathaceous lobed calyx, yellow, the ovary long-slender and pedicel-like above: capsule cylindrical.*

† **Calyptrostigma Maximowiczii,** n. st.

*Diervilla Middendorffiana* var. *Maximowiczii*, S. L. Moore, Journ. Bot. 1878, 129.

*Diervilla Maximowiczii*, Makino, Journ. Jap. Bot. i, 13 (1917).

Japan.

### The Asparagus Lettuce

A race of lettuce in which the edible part is the thickened soft stem of the plant is prized in parts of China and in other regions of Asia. Paillieux et Bois, in "Le Potager d'un Curieux" call it *Romaine du Pamir*. In "Les Plantes Potagères" by Vilmorin-Andrieux et Cie, it is known as *Romaine asperge;* in the early editions of this work (1st. ed. 1883, English ed. 1885, 2nd ed. 1891) it is named *Lactuca angustana*, Hort., and this nomen was carried over as *Lactuca sativa* var. *angustana* by Irish in Bailey's Cyclopedia of American Horticulture, 1900. This name is on the assumption that it is the plant so named as a species by Allioni in 1785. The name has

Note—A dagger (†) is set against new species and new combinations for the benefit of the bibliographer. A name occupying a new status (status novus) is marked n. st., and a transfer without affecting status or rank is designated n. tr. See Gent. Herb. i, p. 8.

been employed presumably as derived from *angustus* in allusion to the long narrow leaves, although it would be unusual to make the form *angustana* (rather than *angusta* or *angustata*) from the Latin adjective. When we go back to Allioni, however, we find that he wrote *augustana*, for a valley (Augusta Pretoria) in the Piedmont of Italy, and it has been erroneously transcribed as *angustana*. In the fourth edition of Les Plantes Potagères, 1925, the name of the asparagus lettuce is corrected to *L. augustana*, All. It is plain that the name *angustana*, being an error, should not be applied to the asparagus lettuce.

It is equally evident, from an examination of Allioni, that his *Lactuca augustana* is not our plant. He presents a good plate of his species: it is a form of *L. Scariola* with unlobed leaves, the plant that Grenier et Godron in 1852 named *L. Scariola* var. *integrata* (with "*L. angustana* All" as synonym).

Fig. 88. Asparagus lettuce taken in public market in Manchuria.

It is apparent that we must have a new trinomial for asparagus lettuce. Vilmorin states that the horticultural name *Lactuca cracoviensis* is a race of the asparagus lettuce with reddish stems and bronzy leaves, but botanically this name has been assigned to *L. saligna*, a very different species; for the present, at least, the Cracow name may be disregarded as a *nomen incertum*, and a provisional arrangement may be as follows:

† **Lactuca sativa,** L. var. **asparagina,** nom. nov.

*L. angustana*, Hort. Vilm., not *L. augustana*, All. Fl. Ped. 1, 224, t. 52 fig. 1 (1785).

*L. sativa* var. *angustana*, Irish in Bailey Cyclo. Amer. Hort. 867 (1900).

Asparagus lettuce does not form a head of leaves nor even a good rosette. The single straight stem grows to 3 feet and more, becoming thick and tender and is eaten as salad when young. The main leaves are narrow-lanceolate and mostly entire, to 1 foot long and 3 inches broad,

long-narrowed toward the top, the radical ones and some of the lower stem leaves more or less oblong or obovate and variously shallowy toothed, those on stem clasping. Fig. 88 shows the product as taken in the market at Mukden, Manchuria; the stems are about 1 to 1½ inches thick. I have grown it at Ithaca from Manchurian seeds. I have not seen the plant in American markets, but seeds are offered by foreign seedsmen who sell in this country; probably it is grown by Chinese and others in North America. I have specimens also from Peking, grown as Wo Sun.

FIG. 89. YOUNG PLANT OF SPARGELSALAT.—*Lactuca sativa* var. *asparagina*.

There are apparently different forms of this stem-lettuce. Fig. 89 shows a young plant of Spargelsalat grown from German seed,—"dieser Sorte werden die Stengel benutzt und wie Spargel zubereitet." This plant has narrower and more entire lower leaves than those I have raised from Manchurian seeds; and the seeds are nearly black rather than light brown as in the oriental stock I have grown. If it should be determined later that we have two distinct or separable races, then the name *asparagina* should apply particularly to the European type.

FIG. 90. EUGENIA PANICULATA; known in California as *E. Hookeri*. (× about ⅔)

### THE CASE OF EUGENIA HOOKERI

Under the name *Eugenia Hookeri* and *E. Hookeriana* an attractive small tree is much planted in California and it has appeared also in Florida. The plant is grown for its attractive evergreen character, the bright red-brown of the young growths and the good winter color as well as for the bloom and the jelly-making fruit. The fruit is shown in Fig. 90. There appears to be no authentic history of its introduction into this country or of its nativity or the origin of its name. It has been reported that it came from Chile, although the tree is clearly of the Australian type rather than Chilean; it would probably fall in the subgenus Jambosa.

The Chilean legend probably originates from the fact that there is a *Eugenia Hookeri* in that country, but how the name came to be applied to the California plant is unexplained. The first step in clearing up the identity of the plant is to account for the Chilean species.

In 1833 Hooker & Arnott published *Eugenia affinis* (Gillies, MS.) from "El Valle del Rio Teno, and del Rio Claro, Chili". Seven years later

Steudel renamed the plant *Eugenia Hookeri* on finding that the name was preoccupied, DeCandolle having named another plant *Eugenia affinis* as early as 1828. It now transpires, however, that the *affinis* of DeCandolle is synonymous with *Eugenia glabrata* of Haiti (Urban, Symb. Antil. viii, 487) and this circumstance allows the *affinis* of Gillies, under the International Rules of Nomenclature, to come up and the name *Hookeri* automatically sinks to synonymy; but under the American Code, *affinis* of Gillies can never be valid because of an earlier *affinis* of whatever standing. With these perplexities we are not now concerned inasmuch we are not dealing with the Chilean plant except to identify it as a means of clearing the eugenia grown in California and Florida.

FIG. 91. EUGENIA HOOKERI of Chile; not known to be in cultivation in North America.

Fortunately the material on which *Eugenia affinis* (and therefore *E. Hookeri* of Steudel) was founded is well preserved at Kew, and through the courtesy of Director A. W. Hill of that institution I have had the opportunity of examining it. Part of the material, natural size, is shown in Fig. 91. It has nothing to do with the plant known in cultivation in California as *Eugenia Hookeri*. It is a small-leaved plant with few pedicelled axillary inflorescences on elongated peduncles.

The *Eugenia Hookeri* of cultivation, however, is clearly Australian. It is related to the plants cultivated in this country as *Eugenia myrtifolia*. It turns out that the name *myrtifolia*, so commonly applied, cannot hold both because the name is itself preoccupied in the genus and because the species has a much older name, *E. paniculata*. The standing of the name *paniculata* is explained by James Britten in the Journal of Botany, xxxvii, 247 (1899). I have authentic herbarium material of *E. paniculata* from

Australia and Director S. J. Rae of the Melbourne Botanic Gardens has kindly identified specimens I have sent him. I have also been over material in other herbaria.

In California it is insisted that *E. Hookeri* differs rather markedly from what they know as *E. myrtifolia*. I think the differences are clear although not of a character or a constancy to separate the plants as species: we may well treat them as varieties. I retain them in the genus Eugenia, as I have not been able to make out good generic marks the world around for the separation of Eugenia, Jambosa, Syzygium. If it is desired to place the plants in Jambosa (or Jambos), the person so desiring may make the transfer bodily into a genus of that name.

FIG. 92. PART OF THE ORIGINAL SPECIMENS of *Eugenia paniculata*. British Museum. (×⅓)

The specimens on which Banks founded his *Eugenia paniculata* are preserved in the British Museum, and by the kindness of Dr. A. B. Rendle I have a photograph of them. This plant has the narrow long-acuminate leaves and the protruded inflorescences of the plant grown in California as *Eugenia Hookeri*. One of the specimens on the sheet is seen in Fig. 92. The portrait of *E. myrtifolia* of Sims in Botanical Magazine, t.2230, where that species was founded, is reproduced (of course without the coloring) in Fig. 93; it is recorded that this *myrtifolia* was introduced to England by the Loddiges and grown in the conservatory. This plant exhibits the short abruptly pointed or obtuse or even emarginate leaves and the short inflorescences among the foliage of the one grown also in California as *myrtifolia*. My arrangement of the forms and the synonymy is as follows:

**Eugenia paniculata,** Banks ex Gaertn. Fruct. et Sem. Plant. i, 167, t. xxxiii, no. 1 (1788). *E. paniculata*, Lam. 1789, is a different plant. Fig. 92.

*Syzygium paniculatum*, Gaertn. l.c.
*Myrtus paniculata*, J. F. Gmel. Syst. 792 (1791).
*Eugenia Hookeri* and *E. Hookeriana*, Hort.

*Eugenia myrtifolia* var. *Hookeriana*, Eastw. Ann. Rept. Golden Gate Park, San Francisco, for 1924, p. 74 (nomen nudum).

Commonly tree-like as grown in California and blooming but once a year (a "cropper"): leaves narrow-oblong or oblong-lanceolate, long-pointed: flowers partly on ends of short branchlets (but not exclusively so) and therefore conspicuous beyond the foliage: fruit to ¾ inch diameter. A quicker-growing plant than the next, and usually considered to be more tender.

† **Eugenia paniculata** var. **australis,** n. st. Fig. 93.

*Eugenia myrtifolia*, Sims, Bot. Mag. t. 2230 (1821), not Salisb., 1796.
*Eugenia australis*, Wendl. in Link Enum. Hort. Berol. ii, 28 (1822).
*Jambosa australis*, DC. Prodr. iii, 287 (1828).
*Jambosa myrtifolia*, Niedz. in Engler & Prantl. Natürl. Pflanzenf. iii, 7, p. 84 (1898).

Plant often remaining more bush-like, but becoming tree-like, and blooming more or less continuously: leaves short-oblong on the flowering shoots and abruptly acute or even obtuse, those on strong shoots longer and acuminate: fruits smaller.

### An Introduced Cryptocarya

An attractive evergreen Chilean tree is planted in various parts of California although it appears not to have been regularly offered by nurserymen nor to have become well known. Its authentic historic binomial is *Bellota Miersii*, Gay, but the genus Bellota is now absorbed in the great genus Cryptocarya (Lauraceæ) and a name must be found for it under the latter genus. The synonymy of the group is complex (see, for example, Meissner in DC. Prodr. xv, pt. 1, 67) and an authoritative name for the plant must await the monographer. In the meantime account may be taken of the use of the binomial *Cryptocarya Miersii* in North American printed records.

The United States Department of Agriculture has made five introductions of the plant in a period of thirty years or more, apparently under the name *Bellota Miersii*, the seed first being obtained by G. P. Rixford. The activity in distributing it in California apparently lies with the late Charles Howard Shinn, once associated with the California Nursery Company at Niles, and with the late E. J. Wickson of the University of California. The Experiment Station of the University, in which Professor Wickson was then an officer, made distribution of seeds of many kinds of plants as recorded in the Reports for 1898-99, 1900-01, 1901-02. In each of the distributions the account states that the seeds of this Chilean tree were obtained from Mr. Shinn of Niles. In the distribution list of 1898-99 is an entry of the plant; I have not seen this account but it is said to be practically identical with the first paragraph of an entry in Inventory No. 8,

FIG. 93. EUGENIA MYRTIFOLIA of Sims in Botanical Magazine; here known as *E. paniculata* var. *australis*.

page 57, of the Office of Foreign Plant Introduction published probably some time in 1901. This account in Inventory No. 8 is as follows:

3929. Cryptocarya miersii.

From Berkeley, Cal. Received through Mr. C. H. Shinn, November 27, 1899. Presented by the California Experiment Station.

"This is a rare and beautiful broad-leaved evergreen belonging to the laurel family. It is an attractive and rather fast-growing lawn tree, fruiting when 15 feet or so in height, and probably not becoming more than 30 feet high. The fragrance of the leaves, though peculiar, is to most people very attractive. The large nuts contain starch and saponin in such quantities that if the tree were common it might possibly have a distinct commercial value. The seeds offered are from a tree grown at Niles, Cal. from Chilean seed obtained through Mr. G. P. Rixford, of San Francisco. They seem to sprout as easily as a buckeye." (*Shinn.*)

In the distribution lists of the Experiment Station for 1900-01 and for 1901-02, by Wickson, the entries are identical, as follows (copied for me):

"Bellota (Cryptocarya Miersii, C. Gay). An ornamental evergreen tree with large, broad leaves; native of Chile. The seed has been raised at Niles. 5 cents per packet postpaid."

In the Report of the Station for 1901-03, three replies are published from persons who received the seeds:

"L. L. Gus, Brentwood, California (Contra Costa Co.). One of the nuts of the Chilean Soap Tree germinated five months after planting and is now 1 inch high with three leaves.

"Thomas W. Cowan, Pacific Grove, Monterey Co. The Chilian Soap-tree took five months before it apppeared above ground, but is now 6 inches high and appears very vigorous.

"A. C. Boyes, Sonoma. Bellota (Cryptocarya Miersii) seed all grew up, but the plants are only from 6 to 8 inches high. It grows very slowly; probably the winter here is too cold for it".

The account of "distribution of seeds, plants, cutting, etc." by Edward J. Wickson in Report of Work of the Agricultural Experiment Station of the University of California, 1901-03, I find carries the following entry (page 144):

"Chilian Soap-Tree (*Cryptocarya*), of Chili, probably *C. miersii*.—This is a rare and beautiful broad-leaved evergreen, belonging to the laurel family. It is an attractive and fast-growing lawn tree, fruiting when 15 feet or so in height, and probably not becoming more than 30 feet high. The fragrance of the leaves, though peculiar, is to most persons very attractive. The large nuts contain starch and saponin in such quantities that if the tree were common it would possibly have a distinct commercial value. The seeds offered are from a tree grown at Niles from Chilian seeds obtained of G. P. Rixford, of San Francisco."

It will be noted that aside from the name of the plant, the above entry (1901-03) is practically the same as in Inventory No. 8, already quoted. Which account has priority I do not know.

There can be no doubt as to the plant intended in these various accounts inasmuch as the entries are associated with the name *Bellota Miersii*. Who is to be quoted as authority for the combination *Cryptocarya Miersii*, however, is not so clear, but it appears that Wickson first published it.

There is a tree of *Cryptocarya Miersii* now standing near the Agricultural Hall, University of California, Berkeley. The tree is about 50 feet tall and 12 feet or more wide with two trunks about 2 feet above the ground; this tree is undoubtedly one of the originals grown from the Shinn seeds. Through the courtesy of Miss Katherine Jones I have herbarium leaf-specimens from this tree; and in 1927 I took a specimen from a small tree of *Bellota Miersii* in Golden Gate Park that had been raised from seed gathered by Eric Walther (as he informs me) at San Rafael, California.

These various specimens agree well with the plate of *Bellota Miersii* by C. Gay in Flora Chilena, v, t. 59 (1849). Mr. Theodore Payne writes me that a tree of *Bellota Miersii* stands on a ranch near Santa Paula, California, and that there are probably other specimens in Ventura County. He once raised about two dozen plants from seed of the Santa Paula tree and sold them to persons interested in rare plants but never listed the species in his catalogue. He adds that from a short distance the tree has much the appearance of a live oak.

# ARTICLE 8. THREE DISCUSSIONS IN CUCURBITACEÆ

In the further study of domesticated cucurbits, three items are now ready for record. The Texan gourd may have special importance to the study of the origin of the Pepo tribes if, as seems likely, it is really an indigenous plant. The recent and continuing archeological discoveries in the western hemisphere, particularly in the southwestern United States, will soon provide material for significant conclusions; and with these studies should be closely associated good botanical search for living native or naturalized plants.

Herein are treated:

The Texan gourd, p. 175
The Okeechobee gourd, p. 177
The botanical name of the watermelon, p. 180

## The Texan Gourd

More than eighty years ago a wild gourd was collected along the river courses of southern Texas, and it early received attention from Scheele, Gray and others. It is *Cucurbita texana* of Asa Gray. In the meantime, however, it has had little recognition, having been generally regarded as an escape from cultivation. The circumstances under which it grows and its wide distribution in Texas indicate, however, that it is probably an indigenous plant, an opinion shared by Professor B. C. Tharp of the University of Texas, who has observed it for some years.

In my discussion of the Cucurbitas last year (Gent Herb. fasc. II) I wrote that "I hope to overtake the Texan plant in the wild". This opportunity came in the autumn of 1929 in the lower Guadalupe valley near Cuero, DeWitt County, under guidance of Professor Tharp and his student Mr. C. H. Mueller. The plant was growing luxuriantly on the flood plains of the Guadalupe river, although badly attacked by a powdery mildew (probably *Erysiphe cichoracearum*) which had killed some colonies; this mildew may be a factor that determines the apparently local or discontinuous distribution of the gourd. I have herbarium material of this gourd plant from flood plains of the Colorado river near Austin collected by Tharp who informs me that it also grows on the Edwards Plateau. Other notes of its distribution are on pages 65 and 66 of the Cucurbita paper to which I have referred. Very likely the plant is also Mexican, but I do not know of any occurrences outside Texas. Collectors should keep this plant in mind.

The Texan gourd appears to be botanically indistinguishable from the more slender forms of the yellow-flowered garden gourds (*Cucurbita Pepo* var. *ovifera*). All these kinds of plants tend to develop large and less-lobed leaves under the good conditions of domestication, and of course the fruits are endlessly variable. The fruits I have seen of the wild Texan plant are oblate-globular, 2 to about 2½ inches across, green when fresh with broad longitudinal bands and scattered dots and marks of lighter green or yellow-

FIG. 94. WILD TEXAN GOURD.—*Cucurbita texana*, natural size.

ish as indicated in the picture (Fig. 94). These fruits are bitter-fleshed and hard-shelled. They become light in weight and durable as they dry, and are probably carried far by flood waters. The flowers (Fig. 95) are yellow, like those of the garden gourds. Gray, who grew the plant at Cambridge, Massachusetts, speaks of the fruits as pyriform. The plant climbs on bushes and small trees; undoubtedly annual. The seeds and peduncles are like those of the small ornamental yellow-flowered gourds of the seedsmen.

One hesitates to refer *C. texana* positively to *C. Pepo* without further observation and study inasmuch as there is no single form of Pepo to be taken as a type for comparison. I have Texana in bloom and fruit in my garden as I write; it is somewhat larger flowered than I saw it in the wild, the

blossoms often measuring four inches across or nearly twice the size in the native place. Another year should give us valuable material for comparison with the Oviferas to be grown near by; and the crossing results of this year will be interesting.

The evidence is accumulating from archeological sources that *Cucurbita Pepo* is American. Remains of this species that far antedate the Spanish era are procured from explorations in the southwestern United States. *Cucurbita texana* gives strong appearance of being indigenous in Texas.

FIG. 95. TEXAN GOURD, IN THE WILD.—*Cucurbita texana*, nearly natural size, staminate and pistillate

Here, then, are two coordinate lines of investigation touching the origin of pumpkins. The American origin of *Cucurbita moschata* is similarly attested by archeological findings but no form of this species has yet been discovered as an indigenous plant.

The botanical publication of the Texan gourd is as follows:

*Tristemon texanum*, Scheele, gen. et sp. nov., Linnæa, xxi, 586 (1848); xxii, 352.

*Cucurbita texana*, Gray, Boston Journ. Nat. Hist. vi, 193 (1850).

### THE OKEECHOBEE GOURD

In my Cucurbita paper of last year (Gent. Herb. ii fasc. II) I called attention to the native wild gourd of the Everglades of Florida and added that I "hope to have more to say about it in due time". For many years

John K. Small has observed this plant, and in January of this year he published it as *Pepo okeechobeensis* (Journ. N. Y. Bot. Gard.). I first collected this gourd in the wild in 1925, and once grew it at Ithaca although the season was too short to bring it to bloom. Last autumn I saw it abundantly along the eastern shore of Lake Okeechobee. It is a characteristic feature of the vegetation in that region, and we are under obligation to Dr. Small for this additional elucidation of the Floridian flora.

There is no evidence or indication that the Okeechobee gourd has anything to do with the origin of the pumpkins and squashes. It is botanically very distinct; it is not likely that the Indians made use of it for food. It has no connection with the so-called Seminole pumpkins of the Indians on the Everglades islands; their pumpkins are *Cucurbita moschata*, as far as I have seen them. Last year I saw them abundantly on one of the cleared or burned-over hammocks, where the Indians grow them with their maize, along with a small tomato; and I have also seen fruits brought out by others. This year I have this pumpkin in my garden, grown from seeds obtained from the Seminoles.

FIG. 96. LEAF OF OKEECHOBEE GOURD.—*Cucurbita okeechobeensis* one-half natural size.

I am not able to accept Pepo as a generic name, as I have explained in my Cucurbita fascicle (pages 78-81). Under the American Code "the first binomial species in order" in a generic account is to be accepted as typifying the genus in case no species was so designated by the author. Applying this rule in Cucurbita we must make the type of the genus to be the white-flowered gourd commonly known as Lagenaria and by so doing

violate Linnæus' own definition of the genus Cucurbita as recorded in the fifth and previous editions of Genera Plantarum. If Cucurbita is restricted to the lagenarias, then Pepo of Philip Miller, 1754, is adopted for the pumpkins and squashes although Miller himself discarded it in his post-Linnæan work; it is at least doubtful whether Miller's abridged fourth edition of the Gardeners Dictionary (1754) is a legitimate citation for genera, as I explain in the Watermelon discussion, page 184. I must therefore place the Okeechobee gourd in Cucurbita:

† **Cucurbita okeechobeensis,** n. tr. Figs. 96, 97, 98.

*Pepo okeechobeensis,* Small, Journ. N. Y. Bot. Gard. xxxi, 12 (Jan. 1930) 1, with fig.

Annual slender tall-climbing tendril-vine, pubescent-hirsute on young shoots that become nearly or quite glabrous with age, lacking the stiff setæ of *C. Pepo* and *C. maxima:* leaf-blades cordate-suborbicular to nearly reniform, 6-8 inches broad and perhaps not as high, basal sinus very broad, retaining more or less close pubescence at least underneath, shallowly angle-lobed, the margin irregularly lightly denticulate, petiole slender and often longer than the blade and finely pubescent: flowers cream-colored to nearly white, rather narrowly bell-shaped, finely pubescent without, corolla 2-3 inches long and ribbed, with flaring wrinkled limb and mucronate lobes: calyx-tube or hypanthium of staminate flower short-oblong, bearing subulate short lobes: gourd hard-shelled with white bitter pulp, globular to oblong-globular, about 3 inches long, smooth, light green with green dots and sometimes lines or somewhat mottled; peduncle slender and about one-half as long as the fruit, hard, somewhat angled and slightly enlarged at attachment; seeds narrow and nearly obovate, flat, about ½ inch long, with slightly raised border and hard even margin.

FIG. 97. FLOWERS OF OKEECHOBEE GOURD.—*Cucurbita okeechobeensis,* staminate and unopened pistillate, nearly natural size.

The small nearly white flowers, slender stems, soft grape-like foliage, and hard green gourds characterize this species as it climbs over bushes and into trees.

FIG. 98. FRUITS OF OKEECHOBEE GOURD.—*Cucurbita okeechobeensis*, two-thirds natural size.

## THE BOTANICAL NAME OF THE WATERMELON

*An example of the problems in systematic nomenclature*

The binomial history of the watermelon is a good example of the deviousness of early records and of the difficulties in making exact application of rules of nomenclature in many of the cultivated plants, and we may profitably spend a few minutes in reconstructing the annals. Although native in South Africa, the watermelon was early distributed widely, and in many parts of the world behaves as if it were indigenous. I have seen it running wild in great areas along the sandy banks of the Orinoco river.

The accepted name of the watermelon is *Citrullus vulgaris*. It turns out, however, that the methods of nomenclature must be liberally in-

terpreted in this case, unless one is willing to adopt the doublet *Citrullus Citrullus*, and even this double name may not be without doubt as to its historical synonymy.

The genus Citrullus has four species, all of the eastern hemisphere, agreeing in the leaves deeply lobed and divided or dissected, tendrils normally 2-3-forked if any, fruit indehiscent and with 3 cells or at least 3 placentæ, flowers solitary, axillary, unisexual, and small as compared with those of the Cucurbita tribes.

The binomial nomenclature of the watermelon begins with Linnæus, Species Plantarum, 1753, as *Cucurbita Citrullus*. Before this time, 1735, Linnæus had proposed the name Colocynthis, and Otto Kuntze long afterward (1891) brought up this old name and made the binomial *Colocynthis Citrullus;* but under accepted rules of nomenclature this name cannot hold because nothing is allowed to be dated back of the first edition of Species Plantarum, 1753.

It was soon felt that the watermelon is generically distinct from the Cucurbitas (pumpkins and squashes), and it has been given a special genus, *Citrullus*. To what date or publication we shall accredit the generic name Citrullus is not a simple or easy problem to decide. Bentham & Hooker assign it to Schrader, which is 1836; Lindley, Endlicher, also Engler & Prantl, to Necker, which is 1790; Index Kewensis as well as Dalla Torre & Harms to Forskål, 1775; and we might with good reason start with Sageret, 1826.

Apparently the first author to employ the name Citrullus as of generic rank is Forskål in Flora Ægyptiaco-Arabica, 1775. The genus is not defined and is therefore a *nomen nudum* under Article 38 of the International Rules. We may suppose that the name is brought over from Linnæus but there is no indication of it in the text and we cannot take it for granted. In fact, there may be some doubt as to whether Forskål meant to establish a genus in the modern sense. Under the general heading "Cucurbitacea" are five subdivisions marked or indicated in a different way from other names that he evidently intended as genera: A) CUCURBITA. B) CITRULLUS. C) PEPO. D) CUCUMIS. E) SATIVUS. Under each of these headings he has names, mostly vernacular, which appear to be those of species, although the last (SATIVUS) is apparently meant as a species of Cucumis, with varieties cited under it, as "C. S. Fakus". The meaning of these arrangements is not clear.

Three kinds of Citrullus are more or less described on page 167 of Forskål, nos. 43, 44, 45. Only the first is given a specific appellation, *Citrullus Battich*, the word *battich* being a vernacular. This binomial has not been adopted by monographers, although it is regularly cited by Index Kewensis. It seems to be a properly constituted binomial, comparable

with other accepted names of Forskål derived from vernaculars, as *Salvia Merjamie* and *Turia Moghadd*.

It now remains to determine what plant Forskål intended to designate as *Citrullus Battich*. Muschler in his recent Manual Flora of Egypt (1912) adopts the usual *Citrullus vulgaris* for the watermelon but adds that the local name is *battikh*. The fact that *battikh* is still the vernacular for watermelon in Egypt is good evidence of the plant Forskål meant to describe. The plant was common in 1775 as attested by the citation of vernaculars in four languages. Forskål says the Arabs distinguish this battich from *bartich*, the latter the true Citrullus (*Citrullo vero*), perhaps meaning the Citrullus of Linnæus. Nothing is said about the character of fruit except that it was cinereous or ashy-tinted at maturity; a fruit so well known would not require much description. The fruit was apparently eaten raw, for the author feels obliged to say that the fruits of the two other kinds of Citrullus were eaten only cooked (edulis coctus). The author makes significant remarks about the seeds. He says that they are superficially painted with extraordinary intersecting lines, as in a lithograph, from which the imagination can conceive various figures; this was not invariably the case, because he cites a fruit taken at Alexandria in which all the seeds were thus figured, a circumstance very rare (quod rarissimum est). Those who know watermelon seeds will recognize such a peculiarity and variation. While the text and situation indicate that the watermelon may have been intended by *Citrullus Battich*, yet we do not know that this was the case. In this dilemma I applied to my friend Dr. Ove Paulsen of the Dansk Botanisk Museum, to determine whether Forskål left any material of Battick; he informs me that there is no specimen in Copenhagen and that Forskål rarely collected the plants cultivated in Arabia but simply made note of them. In these circumstances I do not feel justified in employing *Citrullus Battich* for the watermelon. The other two plants placed by Forskål under Citrullus, without species-names, bear fruits that are edible only when cooked; one of them (no. 44) has simple tendrils, palmate entire leaves, oblong white-spotted fruit 2 inches long, and is probably not congeneric with the watermelon; the other one has fulvous flowers 4 inches across, cordate-subrotund lobed denticulate leaves and sulcate fruit, and this cannot be a watermelon-like plant.

We have seen that under the International Rules the genus Citrullus of Forskål cannot be validated because it lacks diagnosis; and if we cannot validate the species Battich then the genus Citrullus cannot stand under the American Code either. Until we have evidence on the identity of *Battich* or of the other unnamed species, the Citrullus of Forskål automatically disappears from citations.

If *Citrullus Battich* is not accepted for the watermelon, then the difficulties at once increase, for we become involved in the confusions of the old

plant-name Anguria. Duchesne in 1786 called the watermelon *Cucurbita Anguria;* this binomial is validly described and clearly identified, and it looks on the face of it that we are compelled to transfer the name Anguria to the watermelon genus, notwithstanding the fact that it is also the name of the commonly cultivated West Indian gherkin, *Cucumis Anguria,* and also of a genus of tropical American plants in this same family (Cucurbitaceæ). It is necessary that we now consider the name Anguria in some of its various interpretations.

The word Anguria begins, so far as we are concerned, with the herbalists. It is not necessary for our purpose to discuss its Greek antecedents. It acquires particular standing and definition when we come to Tournefort, 1700; here it includes the watermelon as attested by a good picture of the leaf, whatever may be the significance of some of the references cited in the text. The plant was supposed to be American. Linnæus in 1735 adopted Anguria in a Tournefortian sense, but in making a binomial for the watermelon in 1753 he did not choose the Anguria of Tournefort but brought up the earlier Citrullus of Johann Bauhin; he does not cite Tournefort in the Species Plantarum account, but in Hortus Cliffortianus (to which he refers) he cites him, showing that he included the Tournefortian plant or name in his conception of *Cucurbita Citrullus.* The "Citrullus folio colocynthidis secto, semine nigra. Bauh. Hist. 2. p. 235", cited by Linnæus as one of his authorities for *Cucurbita Citrullus,* carries a picture which is the watermelon (Bauhin & Cherler, Historiæ Universalis Plantarum, 1650-51); the full title of the entry in Bauhin adds "quibusdam Anguria", but this name Linnæus ignores in connection with his *Cucurbita Citrullus*: it is adopted in 1700 by Tournefort who cites the same reference. There is a specimen of a long shoot and leaves in the Linnean Herbarium, London, marked Citrullus by Linnæus, of which I have a photograph, and it is the watermelon (see Gent. Herb. ii, 87). There is no doubt as to the plant Linnæus meant to specify as *Cucurbita Citrullus.*

Duchesne in 1786 prefers to bring up the Tournefortian Anguria rather than the Linnæan Citrullus, giving us the binomial *Cucurbita Anguria* for the watermelon, already mentioned (Duchesne in Lamarck, Encyclopédie, ii, 158). Long before this time, however, the Anguria of Tournefort had been published as a genus by Adanson (Familles des Plantes, 138. 1763). In the same year the name had been taken up by Linnæus (Species Plantarum, ed. 2, 1763) for a genus of tropical American plants, and this use of the old name still persists. Adanson's work appears to have priority of publication in the year 1763 over Linnæus, as attested by Otto Kuntze in Revisio Generum Plantarum, i, cxxiii. Yet there is doubt about the tenability of even the Anguria of Adanson. In the same work in which he publishes Anguria, Adanson lists (page 510) certain new genera that are too briefly described or characterized by their authors to make possible the

reference of them to families; among them is Anguria of Jacquin. I have not been able to trace this Jacquinian name; but this reference should be traced and the historical discussion of Kuntze as to the priority of Adanson over Linnæus should be reviewed before we too readily accept the genus Anguria of Adanson; if we adopt this name for the watermelon, the Linnæun genus Anguria of the American tropics, with some twenty-five species, would have to find a new name, and further displacements might result.

In the Fourth Abridged Edition of his Gardeners Dictionary, 1754, Philip Miller employs the name Anguria for the watermelon, but without a botanical or a sufficient diagnosis and without specific names although eight species are mentioned. This Abridged Dictionary is sometimes quoted in the early validation of genera but it is very doubtful whether it should be so cited. It is ante-Linnæan in method although bearing a date a year later than Species Plantarum, and was apparently compiled without knowledge of that work. In the Eighth Edition of the Gardeners Dictionary, 1768, Miller again uses Anguria for the watermelon, with a considerable diagnosis, restricting it to one species but without a binomial, citing only Caspar Bauhin's "Anguria Citrullus dicta".

The complications in the Anguria citations are so many and the confusions resulting from the watermelon validation of the name would be so great that we could hardly justify the making of the transfers, founded on technical and unessential details. No gains would accrue. The matter may well be allowed to rest.

We next fall back on the Citrullus of Necker in Elementa Botanica, vol. 1, 240 (1790), cited as authority for the genus by Cogniaux and others. It is a generic description only and species are not mentioned. The diagnosis calls for simple leaves and a knotty or torulose many-celled fruit (Bacca, torulosa, ovata, subrotunda, plurilocularis): it cannot be any watermelon that we know. Necker's genus is undoubtedly validly published under the International Rules, but we do not know to what plant it applies. The difficulty of interpreting Necker is not peculiar to the genus Citrullus. T. A. Sprague, of the Royal Botanic Gardens at Kew, states (in Proceedings of the International Congress of Plant Sciences ii, 1424) that any botanist who has tried to identify the numerous generic names proposed by Necker knows "that it is impossible to determine the correct application of many of them with any degree of certainty".

The next name for the watermelon appears to be Sageret's *Citrullus pasteca*, 1826, in Annales des Sciences Naturelles. No description is given of the genus and no technical diagnosis of the species, but the application of the binomial to "melon d'eau" is unmistakable. This is a well-cited synonym of *Citrullus vulgaris*. The watermelon is to this day known in French as *pastèque*, and this word is perhaps related in origin to the *battich* of the Egyptians or Arabs, employed by Forskål. If *Citrullus*

*pasteca* is good enough to cite as a synonym it ought also to be good enough to quote as a valid specific name if need be; and if the species *pasteca* is well founded by Sageret, then the genus *Citrullus* is equally founded by him and this would be allowed by the American Code but not by the International Rules. Sageret employs the generic name Citrullus quite incidentally in a "projet de nomenclature pour cette famille" as a corollary of his discussion of hybridity in these plants, as if taking it for granted. Perhaps a search of the literature of that period would disclose a sufficient diagnosis of Citrullus to stabilize it. Personally I think *Citrullus pasteca* should be retained as the binomial of the watermelon, and I should have no hesitation in adopting it if the generic name could be established in accordance with International Rules. If we do not accept it, we should not countenance it even as a synonym. We have here a curious case in which we know perfectly well what plant is meant by a properly constituted binomial yet are not allowed to recognize it: the species was founded before its genus was published in conformity with statute.

This pasteca represents a class of cases in which rules of nomenclature do not meet the needs in cultivated plants to which good vernacular names have been attached through the years and which have authentic histories, and that therefore do not require, for identification, the formal botanical diagnosis that is essential to accuracy in the nomenclature of other plants.

The first clearly defined use of *Citrullus* for the watermelon genus is apparently that of Schrader in Ecklon & Zeyher, Enumeratio Plantarum Africæ Australis Extratropicæ, 279. The date of this part of the publication is 1836, as attested by the entry at the bottom of page 273. Some authors date the genus *Citrullus* from this point and here is where the binomial *Citrullus vulgaris* arises. If we adopt the *Citrullus* of Schrader then we cannot cite either *C. pasteca* of Sageret, 1826, or *C. Battich* of Forskål, 1775, because under the International Rules the genus was on those dates non-existent.

Under the American Code the case works out better if one is allowed or is ready to use a binary or duplicate appellation: the oldest specific name for the watermelon is *Citrullus* (*Cucurbita Citrullus* of Linnæus 1753). In 1882 Karsten combined the species-name *Citrullus* with the genus-name *Citrullus* and gave us the binomial *Citrullus Citrullus*.

The name and synonymy of the watermelon as the case now stands may be displayed as follows for our purpose:

**Citrullus vulgaris,** Schrad. in Eckl. & Zeyh. Enum. Pl. Afr. Austr. Extratrop. 279 (1836); Linnæa, xii, 412 (1838).
*Cucurbita Citrullus*, Linn. Sp. Pl. 1010 (1753)
*Cucurbita Anguria*, Duch.; Lam. Encyc. ii, 158 (1786)
*Cucumis Citrullus*, Ser. in DC. Prodr. iii, 301 (1828)
*Citrullus Caffer*, Schrad. in Eckl. & Zeyher, l.c.

*Citrullus caffrorum*, Schrad. in Linnæea, xii, 412 (1838)
*Citrullus vulgaris* var. *caffrorum*, Alef. Landwirth. Fl. 210 (1866)
*Citrullus Citrullus*, Karsten, Deutsche Flora, 889 (1882)
*Colocynthis Citrullus*, O. Kuntze, Rev. Gen. Plant. i, 256 (1891)

**Citrullus vulgaris** var. **lanatus,** Bailey, Gent. Herb. ii, 87 (1929)
*Momordica lanata*, Thunb. Prodr. Fl. Capens. 13 (1794)
*Citrullus amarus*, Schrad. in Eckl. & Zeyher, l.c. and Linnæa. l.c.

† **Citrullus vulgaris** var. **citroides,** var. nov.

CITRON or PRESERVING MELON, employed only for the making of conserves after the manner of true citron: fruit small, globular or short-oblong, bearing alternate lengthwise markings of dark green and white, flesh white, solid and hard and not eatable raw: seeds not marked or marbled: plant long-running, the growing tips less woolly-hairy than in the common watermelon. Differences in foliage and flowers appear to mark the var. but I do not find them to be constant on comparison with a wide range of watermelons. Good citron melons run 5 to 7 inches in diameter.

NOTE.—A varietal name, and diagnosis of the var., were made by me some two or three years ago. The MS. account was expanded for my Curcurbita paper (published May, 1929) and then withheld for another year's observation of growing plants. In the meantime the var. was included in a brief account of Citrullus for Hortus, and type has now been plated and the page released for printing although the present paper will be actually published in advance of that book. I now find that the watermelon has been newly studied in Russia and the papers are just at hand after my account is ready (Bulletin No. 3 of Applied Botany, of Genetics and Plant-Breeding, published by the Institute of Applied Botany and New Cultures, Leningrad, 1930). Perhaps the species, *Citrullus colocynthoides*, there proposed by K. I. Pangalo, includes the garden preserving citron here named *Citrullus vulgaris* var. *citroides;* that new species includes "citron forage watermelons", growing of their own accord in the southern part of Soviet Russia something like a weed, nobody cultivating them, recently utilized as forage plants. The illustration of the fruits of these spontaneous melons shows some of them to be externally like the American garden citron melon and others very different from anything I have seen. It will be interesting to determine, if possible, whether the preserving citrons originated from Russian or Asian stocks. The name *calocynthoides* is proposed as an independent species of Citrullus, not as a var. of *Citrullus vulgaris*, and therefore it and var. *citroides* are not in nomenclatorial conflict, even though we may find (as I suspect) that the American and Russian plants are equivalents for purposes of systematic diagnosis.

## ARTICLE 9. BINOMIALS OF CERTAIN PALMS

Six palms that have recently come under review in the United States apparently require discussion as to nomenclature. I am not aware that the Roystonea here mentioned has been planted within the limits of the continental United States; the Guilielma is an important fruit-bearing tree in Central America; the other species have ornamental value.

The palms treated in this section are

Transfer in Roystonea, p. 187
Transfer in Guilielma, p. 187
The synonymy of Normanbya, p. 187
The Windmill or Chusan Palm, p. 188
The case of Stevensonia, p. 192
The Arikury Palm, p. 195

### Transfer in Roystonea

ROYSTONEA, O. F. Cook, Science, ser. II, xi, 479 (1900).
*Oreodoxa*, Martius, Hist. Nat. Palm. iii, 166 (1837), not Willd. (1804)

† **Roystonea princeps,** n. tr.
*Oreodoxa princeps*, Becc. Palms Indig. Cuba, Pomona College Journal Econ. Bot. ii, 266 (1912). This plant occurs in herbaria under another specific name but which apparently was never published.

Jamaica.

### Transfer in Guilielma

GUILIELMA, Martius, Palm. Famil. 21 (1824); Hist. Nat. Palm. ii, 81, tt. 66, 67 (1824).

† **Guilielma Gasipaes,** n. tr.
*Bactris Gasipaes*, HBK. Gen. Nov. et Sp. i, 242 (1815).
*Guilielma speciosa*, Martius, Hist. Nat. Palm, ii, 82, tt. 66, 67 (1824).

Northern South America, Amazonas. It varies greatly in the fruit: Var. **flava** (*G. speciosa* var. *flava*, Barg.-Rodr. Enum. Palm. Nov. 23, 1875); var. **coccinea** (*G. speciosa* var. *coccinea*, Barb. Rodr. l.c.); var. **ochracea** (*G. speciosa* var. *ochracea*, Barb. Rodr. Vellozia, 40). The Pejibaye of Costa Rica is probably the same (see Popenoe, Journ. Hered. Apr. 1921, 154); it is known as *G. utilis*, the name dating from 1858.

### The synonymy of Normanbya

NORMANBYA, F. Muell. Fragm. Phyt. xi, 57 (1878) in obs.; Becc., Ann. Jard. Buitenz. ii, 91 (1885); Dammer, Ber. Deutsch. Bot. Gesellsch. xxi, 95 (1903). *Drymophlœus*, Benth. & Hook. Gen. Pl. iii, 893 (1883).

† **Normanbya Normanbyi,** n. tr.

*Cocos Normanbyi*, W. Hill, Rept. Brisbane Bot. Gard. 1874, p. 6, apud Von Mueller.

*Areca Normanbyi*, F. Muell. Fragm. Phyt. viii, 235 (1874).

*Saguerus Australasicus*, Wendl. & Drude, Linnæa, xxxix, 219 (1875), apud Muell. Fragm. Phyt. xi, 56.

*Ptychosperma Normanbyi*, F. Muell. Fragm. Phyt. xi, 56, 57 (1878).

*Drymophlœus Normanbyi*, F. M. Bailey, Queensl. Fl. v, 1678 (1902).

*Normanbya Muelleri*, Becc. in Agric. Coloniale, x, 615, Firenze (1916).

Queensland.

THE WINDMILL OR CHUSAN PALM

Probably the hardiest of the palms introduced into the United States and well tested is the tree known as the windmill palm or prevailingly as *Trachycarpus excelsus*, from China. On the Atlantic side of the Continent this palm stands as far as the piedmont of North Carolina. Visitors to the Royal Botanic Gardens at Kew, England, will recall the trees of it on the grounds. A tree growing in the open on the property of Dr. F. C. Brown at Durham, North Carolina, is shown in Fig. 99, having been photographed for me by Professor H. L. Blomquist of Duke University. I have leaf specimens from the Biltmore estate, North Carolina, taken in 1894. The windmill palm is freely planted in southern California. In Florida Mowry writes (Palms of Florida, Bull. 184, Fla. Exp. Sta.): "This species seemingly does not thrive in sandy soils in the southern part of the state, but is grown with success in the extreme northern portion, particularly where planted in a clay soil". It was listed as "the hardiest of all exotic palms" in former years by the Berckmans Nurseries and I took a specimen long ago from a tree in the open on their place at Augusta, Georgia. I have recently seen established trees, one about eighteen feet tall, on the grounds of Dr. Benjamin W. Hunt at Eatonton, Putnam Co., Georgia. I have taken the palm also at New Orleans. On the Pacific side the windmill palm is reported standing as far north as Coos Co., Oregon, near the ocean.

The nomenclature of the windmill palm discloses an interesting complication. It was first well described and illustrated by Martius in his great Historia Naturalis Palmarum in 1849 as *Chamærops excelsa*, the name having been taken from Thunberg's Flora Japonica, 1784. The description in Thunberg, however, shows that he did not intend the palm we now know as Trachycarpus although the treatment itself does not disclose the identity of his plant. Thunberg's account apparently covers two very different palms; it is only by consulting the specimens he left that we can make sure of the one to which the name should apply. Martius himself was aware of the situation.

The first definite separation of the windmill palm from the genus Chamærops occurs in an extended article by J. Gay on "Le Chamærops excelsa" in Bulletin de la Société Botanique de France, 1861; in this essay the oriental palms of this relationship are separated in the genus Trachycarpus on the authority of Hermann Wendland. The *Chamærops excelsa* of Thunberg is transferred as *Trachycarpus excelsus*, following the determination of Martius.

FIG. 99. WINDMILL PALM in North Carolina.—*Trachycarpus Fortunei.*

It has long been recognized that the Trachycarpus of Thunberg is not exclusively the plant to which the name has been applied in the past eighty years. It has remained for Rehder to work out the case very recently in the Journal of the Arnold Arboretum (July, 1930). He has obtained a photograph of Thunberg's type, at Upsala, and has reviewed the literature. Thunberg had the cane-palm known as *Rhapis flabelliformis*, although his character "caulis arboreus excelsus" is at variance. Thunberg had a form or variety α and a variety β, and cited the older work of Kaempfer. The former in Kaempfer is Trachycarpus. The latter in Kaempfer is undoubtedly a Rhapis (*R. humilis* according to Rehder); the type specimen of Thunberg, however, is another Rhapis, *R. flabelliformis*, and to this plant the description apparently was meant to apply. Therefore, on the suggestion of the late Augustine Henry, Rehder makes the new combination *Rhapis excelsa*, Henry (*R. flabelliformis*, L'Her.).

This inevitable transfer of Thunberg's *Chamærops excelsa* to Rhapis forces us to find another name for the windmill palm. Fortunately such a name is at hand in *Chamærops Fortunei* of W. J. Hooker in Botanical Magazine, 1860 (t.5221). This name was bestowed on "Mr. Fortune's Chusan Palm", planted in England, on the assumption that it is specifically distinct from *Chamærops excelsa* in the following particulars: "A more robust species, with more compact and appressed matted network of fibres amongst the bases of the petioles, much stouter shorter petioles, less glaucous more shining foliage, far broader segments of the leaves, and pendulous apices to these". The flowers of the two are said to be nearly alike, and the fruit was unknown (the figures of the fruit in t. 5221 being an error).

The question now remains as to whether there are really two species, the one traditionally called *Trachycarpus excelsus* and *T. Fortunei*. As long ago as 1894 Beccari and J. D. Hooker considered them to be the same, according to the treatment in the Flora of British India (vi, p. 436); this decision is repeated by Beccari in Webbia, 1905 (i, p. 41) and again in 1921 (v, p. 167), and followed by Blatter in his recent work, Palms of British India and Ceylon. This is also the disposition adopted by Forbes & Hemsley in their enumeration of the plants of China (1903); also by Elwes & Henry in the extensive work on the Trees of Great Britain and Ireland (1913) and by Bean in Trees and Shrubs Hardy in the British Isles (1921) although in these cases under the name *Trachycarpus Fortunei*.

In 1904 Makino divided the species into two parts,—var. *typicus* for *T. excelsus* itself and var. *Fortunei*. This treatment as to var. *Fortunei* I followed in my Manual of Cultivated Plants, 1924. Since that time I have had opportunity to observe windmill palms in many places and have come to the conclusion that cultivated *T. Fortunei* is not separable from *T. excelsus*. Growers point out differences in seedling trees, as they do also in seedlings of the queen palm (*Arecastrum Romanzoffianum*, better known as *Cocos plumosa*), but I have not been able to discover that the unlikenesses are constant or botanically significant. Persons do not seem to realize that palms may vary from seeds as do arborvitæ and silver maples. It is not unreasonable to expect that races or strains may differ in hardiness, as do Douglas fir and other plants. It is significant that the separations within this species have been made on cultivated plants; studies of wild plants may disclose differences.

The botanical synonymy of the windmill palm may be stated, on the basis of present knowledge, as follows:

**Trachycarpus Fortunei,** Wendl. Bull. Bot. Soc. France, viii, 429 (1861).
*Chamærops excelsa*, Martius, Hist. Nat. Palm. iii, 251, t. 125 (1849), not Thumb.
*Chamærops Fortunei*, Hook. in Bot. Mag. t. 5221 (1860).
*Trachycarpus excelsus*, Wendl. Bull. Bot. Soc. France, viii, 429 (1861).

*Chamærops excelsa* var. *gracilis*, Carr. Rev. Hort. lxvii, 220 (1875).
*Trachycarpus excelsus* vars. *typicus* and *Fortunei*, Makino, Tokyo Bot. Mag. 1904, 20, and fasc. 4 Obs. Fl. Japan, 1904, 7.
*Trachycarpus Fortunei* var. *gracilis*, Henry in Elwes & Henry, Trees of Gt. Brit. & Irel. vii, 1691 (1913).

The var. *surculosa* of *Trachycarpus Fortunei*, Henry in Elwes & Henry Trees of Great Britain and Ireland, vii, 1691 (1913), is perhaps *Trachycarpus nana*, Becc. in Webbia iii, 187 (1910) as suggested by Bean.

The exact native occurrences of the windmill palm appear not to be well understood. Flora of British India gives the range as Upper Burma, Yunnan, China, Japan. It is usual to attribute one or another of the forms to Japan whence they may have been introduced. Makino says of *T excelsus* var. *typicus*, "Middle and Southern Japan, planted", and of var. *Fortunei*, "Middle and Southern Japan, cultivated from China". The following year (1905) Matsumura in Index Plantarum Japonicarum lists *T. excelsus* var. *typicus* as if native in Japan, and var. *Fortunei* as "Nippon, cult." Beccari in 1905 gives the range of *T. excelsus* (which he writes *excelsa*) including *Fortunei* as northern Burma to Yunnan, eastern China, Island of Chusan, and Japan; it had become widely spontaneous. I have taken it in China as a cultivated plant, and also have specimens from Japan. It seems to be difficult to determine from the printed accounts where the plant is native and where introduced, but there is apparently no doubt that the species is indigenous somewhere in China; Forbes & Hemsley, in Journal Linnean Society, xxxvi, 169 (1903) state: "This plant has been cultivated in many parts of China for a considerable time, and it is doubtful in what provinces it is really wild".

The windmill palm makes a slender tree to 30 and more feet tall, the trunk covered with a thick black hair-like fiber: leaves palmate, orbicular or nearly so in outline, 2 to 4 feet across, rather stiff and without filaments, with many narrow segments extending two-thirds or more to the base, the petiole with small serratures or callous points on the two edges: flower-cluster among the leaves, short: flowers hermaphrodite or functionally imperfect (polygamous): fruit a dry berry-like body, normally three roughened carpels together each about the size of a pea.

NOTE—A note should be added on the gender of the name Trachycarpus inasmuch as there are two practices. Drude, Beccari and others write the species-names with feminine ending, whereas others follow Wendland, founder of the genus in treating the generic name as masculine (he wrote *Trachycarpus excelsus*, *T. Martianus*, *T. Khasianus*). Other palm generic names in similar form also take masculine species-names in practice, as Chrysalidocarpus, Œnocarpus, Pholidocarpus. As the names in Trachycarpus must be harmonized, it seems best to continue the original practice of Wendland. About a half dozen species are in the genus.

THE CASE OF STEVENSONIA

STEVENSONIA, Duncan, Cat. Roy. Bot. Gard. Mauritius (1863), *nomen;* Van Houtte, Fl. des Serr. xv, 177, t. 1595-6 (1865), not *Stephensonia* as quoted by Index Kewensis and Della Torre & Harms for this citation. *Phoenicophorium*, H. Wendl. Ill. Hort. xii, misc. 5 and t. 433 (1865).

† **Stevensonia Borsigiana,** n. tr.

*Astrocaryum Borsigianum*, K. Koch, Wochenschr. Gärt. u. Pflanzenk. 401; Gartenfl. 1861, 29.

*Astrocaryum Borsigii*, Hort., apud Koch, l.c.

*Astrocaryum aureo-pictum*, Hort., apud Koch, l.c.

*Areca sechellarum*, Hort., apud Koch, l.c.

*Astrocaryum aureo-punctatum*, Lem. Ill. Hort. vi, note sub t. 229, *nomen* (1859).

*Stevensonia grandifolia*, Duncan, Cat. Roy. Bot. Gard. Mauritius (1863) *nomen;* Van Houtte in Fl. des Serr. xv, p. 177 (Apr. 1865).

*Stephensonia grandifolia*, Hort.; Proc. Roy. Hort. Soc. Lond. iv, 134 (1864).

*Stevensonia sechellarum*, Van Houtte, Fl. des Serr. xv, t. 1595-6 (Apr. 1865).

*Phœnicophorium Sechellarum*, H. Wendl. Ill. Hort. xii, misc. 5, t. 433 (Apr. 1865).

*Phœnicophorium Borsigianum*, Stuntz, Inventory Seed and Plant Import. no. 31, p. 88, Bur. Pl. Ind., U. S. Dept. Agr. (1914).

This beautiful palm of the Seychelles, now widely planted in tropics and sometimes seen under glass, is the subject of an unpleasant confusion as to its name. It appears to have been first mentioned with Latin name in two journals bearing date December 1859: as *Astrocaryum aureo-punctatum* in note under t. 229 vol. vi, L'Illustration Horticole, without description, and as *A. Borsigianum* by Karl Koch in Wochenschrift für Gärtnerei und Pflanzenkunde. The latter account, by Koch, is sufficient to constitute a regular publication of the species although it states that the plant had been known in cultivation as *Areca sechellarum*, *Astrocaryum aureo-pictum* and *A. Borsigii*. The nativity of this palm was unknown to Koch, for he supposes it may have come from Brazil, Verschaffelt said it was from India, and in England it was known as from the Seychelles. From Koch's description and the subsequent history there seems to be no doubt as to the application of the different names and references to the same species of the Seychelle Islands; Koch drew his description from a virgin plant only 3 feet high.

The history of the plant as given by Koch in the Wochenschrift being translated is as follows:

*Astrocaryum Borsigianum* seems to have been first in the Paris gardens; perhaps it was discovered by the traveler Morel in Brazil and brought by him to Europe; he now lives in Paris. During the great Industrial Exposition of 1855 Kommerzienrath Borsig saw a small plant at the establishment of a commercial horticulturist in the metropolis of the French empire, and purchased it at a fairly high price to place it in his palm collection. We do not know whether at that time the plant was in other gardens, but rather doubt it. In any case it must have been in rather isolated cases, for certainly so beautiful a plant would have been better known otherwise.

It is said to have been introduced into England from the Seychelles during the last two or three years, under the name *Areca sechellarum*, and from there have come to Belgium. But Ambr. Verschaffelt of Ghent also claims to have received it from India, for it appears for the first time in his recent "List of Plants", which contains so many new and no less beautiful species, under the name of *Astrocaryum aureo-pictum* at a price of 250 to 500 francs. To be sure this is the highest-priced species in his catalogue, and it is a very high price, but it is yet to be matched for beauty. Therefore we cannot recommend it too highly. Aside from the fact that this plant was named *Astrocaryum Borsigii* some time ago, Verschaffelt's designation "aureo-pictum" seems to be inappropriate because the small ochre-colored (not yellow) spots are sometimes less distinct, and even may disappear, it seems.

This palms is not an *Astrocaryum*, but the specific name *Borsigianum*, duly described, is to be retained under the rules in whatever genus is accepted. The plant is so distinct from others as to be placed properly in a genus by itself. It was first separated in 1863 by James Duncan in his Catalogue of the Plants in the Royal Botanic Gardens, Mauritius, as *Stevensonia grandiflora* but corrected in the Errata of the same publication to *S. grandifolia*, named in compliment to the Governor of Mauritius; but there is no description and therefore the name is not tenable although the record "Palmaceæ. Dependencies of Mauritius" leaves no doubt as to the plant that was intended, and the subsequent history is continuous. In July, 1864, in Proceedings of the Royal Horticultural Society, London (iv, p. 134) appears the first description under a separate genus, but the generic name is misspelled: "*Stephensonia grandifolia.* A bold-habited Palm with broad leaves, two-lobed and incisely toothed at the end, the stalks and stem clothed with abundant brown needle-shaped spines. Mr. Veitch, 1st certificate". This description, although not technical, together with the known habitat and the horticultural record, sufficiently identifies the palm. A similar description under the same name is given in Hogg's Gardeners Year-Book, published in 1865, p. 52.

In 1864, also, the palm appears in the Catalogue of Ambroise Verschaffelt, no. 74, p. 12, Ghent, as follows: "*Astrocaryum aureopictum* (Stephensonia grandifolia) 250 fr. Magnifique espèce, preséntant par ses nombreux et longs aiguillons sur le rachis de ses frondes, un aspect aussi singulier que pittoresque; frondes pinnées tres grandes, d'un verte superbe, élégamment piquete-moucheté de petites macules d'un fauve vif, comme

doré". Undoubtedly this description or a similar one had appeared in an earlier Catalogue of Verschaffelt, which I am unable to verify, as indicated by the reference in Flore des Serres, XV (1865), 177, to *Astrocaryum aureopictum* "Hort. A. Versch. in Catal. Illustr. XII, misc. page 5".

In England, small plants were grown at Kew but one of them was stolen, as the record goes, by a foreign gardener and was afterwards found in a private garden on the Continent. It was on this circumstance that Wendland proposed the generic name *Phœnicophorium*, "thief palm", and published it in 1865 as *P. sechellarum*, with Latin diagnosis of genus and species but flowers not mentioned. Wendland knew the previous names of the palm for he cites them from Koch, Verschaffelt, and Hort., and Duncan's *Stevensonia grandifolia* was added by the editor on the authority of a letter from Wendland; these names are important elements in his identification; there was no necessity to make a new generic name, but only to diagnose and therefore stabilize the one in use among growers. There were no doubts as to the application of current names. Wendland says that the plant was introduced directly from the Seychelles eight or nine years before by the house of A. Verschaffelt. The plant was well figured as Stevensonia in the same month (April 1865) as it was figured and described under the absurd name Phœnicophorium.

It has been assumed that under arbitrary formal botanical usage the name Phœnicophorium holds because accompanied by a diagnosis, but this question is open to interpretation; and even in nomenclature a rule of reason should be admissable on occasion. The International Rules wisely allow for such leeway (Art. 5): "No custom contrary to rule can be upheld if it leads to confusion or error. When a custom offers no serious inconvenience of this kind, it may be a ground for exceptions. . . ." Aside from the question of technical priority of names applied within a very brief space of time, the name Phœnicophorium is highly objectionable not only because it is formidable but because it perpetuates merely a misdemeanor, and also because it establishes the name "thief palm" in horticulture. J. D. Hooker, writing in Botanical Magazine in 1893 (t. 7277) quotes J. Smith on the history and name of the palm. Smith considers the name Phœnicophorium as "not justified" under the circumstances, and "also that it was a very undignified name for such a noble palm, and founded on such an ignoble circumstance". Hooker adopts Stevensonia, as also Bentham & Hooker in Genera Plantarum, but Drude in Engler & Prantl accepts Phœnicophorium.

A portrait of the palm appeared in L'Illustration Horticole in fascicle bearing date April 1865, under the name *Phœnicophorium sechellarum*, by Ch. Lemaire. In the same month another portrait appeared in Flore des Serres published in the same city (Ghent) under the authorship of L. Van Houtte. The plate in Flore des Serres is under the name *Stevensonia*

*sechellarum* with *Phœnicophorium sechellarum* apparently intended as a synonym; the text carries the Phœnicophorium name as the leader with *Stevensonia grandifolia* Dunc. apparently intended as a synonym; the Wendland publication in Ill. Hort. (*Phœnicophorium*) appears to antedate the Van Houtte treatment because the latter quotes the former, but it is unsafe to make such decision for Van Houtte may have seen an advance proof. In the Flore des Serres account Van Houtte roundly protests and ridicules the name Phœnicophorium.

I am convinced that the generic name *Phœnicophorium* should be outlawed; but the specific name *Borsigianum* is the oldest tenable one we yet know and it may now follow the palm into *Stevensonia*, the binomial becoming *Stevensonia Borsigiana*.

## The Arikury Palm

In 1891 Barbosa-Rodrigues founded the genus Arikuryroba for a single Cocos-like small palm in Brazil, adopting an Indian vernacular name. The species is *A. Capanemæ*, named in compliment to the Brazilian botanist and geologist Professor Dr. Guilherme Schuch de Capanema. In 1897 it appeared as *Cocos Capanemæ* by Drude, and in 1898 as *Cocos Arikuryroba* by Barbosa himself as if he had changed his mind about the disposition of it although in 1903 in his great Sertum Palmarum Brasiliensium he describes and figures it again as *Arikuryroba Capanemæ*. In 1916 Beccari identified the palm with *Cocos schizophylla* of Martius (1826) by means of flowers and fruits of the Cocos cultivated in the botanic garden in Calcutta. Beccari accepts the Barbosan genus but shortens the word to Arikury, making in fact a new generic name; the plant becomes *Arikury schizophylla*, and this is the current binomial. We cannot adopt this abridgement of the generic nomen under any organized rule of nomenclature, however much we may prefer the shorter name. The problem remains of finding a tenable binomial under the full name Arikuryroba if we accept the segregation from Cocos (as I think we must).

Martius founded *Cocos schizophylla* in Volume II of Historia Naturalis Palmarum, in a fascicle published in 1826. As a record he cites "*Cocos de Aricui vel de Aracuri*, Maximilian Prinz von Neuwied, Reise in Brasilien, I, p. 272", quoted also by Beccari in "Il Genere Cocos", 1916. This reference becomes "*Cocos Aricui Prinz v. Neuwied, Reise in Brazil, I, 272*" by Drude in Flora Brasiliensis, 1882. It is now necessary, therefore, to examine the old account in Maximilian, for *Aricui* becomes the oldest specific name if it is there botanically published.

The work in question is "Reise nach Brasilien in den Jahren 1815 bis 1817 von Maximilian Prinz zu Wied-Neuwied". On page 271 of Volume I (Frankfurt a M. 1820) begins an account of "Stachellose Arten von Palmen", of which nine kinds are listed, and the last entry is the one we seek

(p. 272): "9) *Cocos de Aricurí* oder *Aracui;* eine 15 bis 18 Fuss hohe Palme an der Seeküste im Sande, in der Gegend von *Alcobaca* und *Belmonte*, mit 3 bis 4 oder mehreren Blättern, deren Blattstiele (*petioli*) an ihrer Wurzel mit stumpfen stachelartigen Auswüchsen an beyden Seiten besetzt ist. Wenn die *frondes* abfallen, so bleibt der Blättstiel stehen, dies bildet einen sehr rauen kurzen Stamm. *Frondes* schön gewölbt, glänzend grün und glatt. Die Fruchtrispe trägt eine Menge runder Steinfrüchte, von der Grösse einer starken runden Pflaume, die mit einem schönen orangefarbenen Fleische überzogen sind. Man macht aus den Blättern leichte Strohhüte". Then follows an account of three palms "Mit wahren Stacheln besetze Arten". Two considerations emerge from this travel-account: (1) a new species is not described, with a botanical binomial; (2) this aricui palm perhaps may not be the one intended by Martius as *Cocos schizophylla* or by Barbosa as *Arikuryroba Capanamæ*.

If we accept the determinations of Beccari, then certain consequences follow:

ARIKURYROBA, Barb.-Rodr. Plant Nov. Cult. Jard. Bot. Rio-de-Jan., fasc. I, p. 5, t. iii (1891). *Arikury*, Becc., Il Genere Cocos in L'Agric. Coloniale, Firenze, x, 13 (1916).

† **Arikuryroba schizophylla,** n. tr. Figs. 100, 101, 102.

*Cocos schizophylla*, Martius, Hist. Nat. Palm. ii, 119, tt. 84, 85 (1826).

*Cocos Aricui*, Drude in Martius Fl. Brasil. iii, pt. 2, p. 422 (1882), *nomen.*

*Arikuryroba Capanemæ*, Barb.-Rodr. l.c., p. 6 (1891), and Sertum Palm. Bras. ii, 126 t. 90A (1903).

*Cocos Capanemæ*, Drude, Engler & Prantl Natürl. Pflanzenf. Nachtr. i, 57 (1897)

*Cocos Arikuryroba*, Barb.-Rodr. Palm. Mattogr. 25 (1898).

*Arikury schizophylla*, Becc. l.c. 13 (Sept., 1916); *Aricury schizophylla* in Index p. 125

*Aricuri schizophylla*, Becc. l.c. 611 (Dec., 1916).

We may now consider the confusion that has arisen between the *Cocos schizophylla* of Martius and the *Arikuryroba Capanemæ* of Barbosa. When he founded the genus *Arikuryroba*, Barbosa was aware of the resemblance to *Cocos schizophylla* and considered the case in his general discussion in the Portuguese explanations although making no contrasts in the Latin diagnosis. Martius does not describe or figure the internal structure of the nut of *C. schizophylla* and therefore the character of the fruit was practically unknown when Barbosa wrote. Barbosa states that seeds of *Cocos schizophylla* were supplied him by Professor Barão de Capaneme, "which had never been studied till the present time" (que não tinham sido até hoje estudados). These nuts or seeds disclosed an equable rather than a

ruminate albumen and it was on this character that Barbosa largely depended in his separation of Arikuryroba from *Cocos schizophylla*, and he figures these contrasts in his original paper in 1891 and also in the Sertum

FIG. 100. A SMALL ATTRACTIVE PALM grown under at least three names (in three genera), evidently the arikury of Brazil.

in 1903. Beccari in reviewing the Cocos tribes in 1916, having had flowers and fruits of *Cocos schizophylla* from the Botanic Garden in Calcutta, found that the nuts so named had a ruminate albumen, and he concluded that the seeds of this Cocos possessed by Barbosa were misnamed; in his informal remarks in Italian under Arikuryroba (Arikury) Beccari states that the seeds of Barbosa's plates are *Butia Boneti*, and repeats this finding in the Latin synonymy in his discussion of that species.

FIG. 101. INFLORESCENCE OF THE SMALL PALM known as *Cocos schizophylla* in Demerara.

I have taken what is known as *Cocos schizophylla* in the Botanic Garden at Georgetown, Demerara (British Guiana), apparently agreeing with the description and plates of Martius, and the seeds have ruminate albumen; and the plant agrees also with the Barbosan description and plates of *Arikuryroba Capanemæ;* I am the more ready, therefore, to follow the conclusion of Beccari that the two palms are the same and to unite the specific name *schizophylla* to the genus *Arikuryroba*. I have also taken *Arikuryroba Capanemæ* in Jardim Botanico, Rio de Janeiro, presumably planted under Barbosa's hand, and it agrees with the foregoing determinations. In the Jardim there was also a fruitful tree labelled *Cocos schizophylla*, Mart., but it is a Syagrus; this would imply that *Cocos schizophylla* was not understood. Drude calls attention to certain errors in Martius.

The present account is one more effort to understand the arikury palm, awaiting a fuller disposition of the case. It is apparent that the planted material of *Cocos schizophylla* and *Arikuryroba Capanemæ* are the same. We now require studies of these palms in the wild, with ample herbarium material. Both are recorded as native in Bahia.

There is still another feature associated with the arikury palm. The name *Areca Alicæ* has appeared in lists as planted in the United States. This Areca is Australian. Seeds under this name were introduced in 1903 by the United States Department of Agriculture (FPI 9727) from Castleton Gardens, Jamaica; seeds of this introduction have been supplied me, and they apparently are correctly named. Yet I have not been able to find *Areca Alicæ* growing in the United States. In the Harvard Botanic Garden at Soledad near Cienfuegos, Cuba, are fruiting trees under the name *Areca Alicæ* (Fig. 100), but they are the same as *Cocos schizophylla* planted in Demerara. I have taken the same plant also in Havana, planted without name. A leaf sent me of the plant grown in southern Florida as *Areca Alicæ* is not that species and has every appearance of being the arikury palm; fruits are now required for fuller identification. It would be interesting to learn how this transfer of names has taken place; similar misapplications are common in the palms.

FIG. 102. FRUIT-CLUSTER OF *Cocos schizophylla* taken in Demerara; about one-fourth natural size.

## ARTICLE 10. SOUTH AMERICAN NOVELTIES

A few new or critical South American plants collected some years ago and determined at the time by specialists in the groups have not been published. Some of these remainders may be brought together here. Fortunately, descriptions had been written by all the persons, one of whom (J. N. Rose) is now deceased. I am fortunate, also, to have had the advice of Dr. N. L. Britton, who has given much study to certain ranges of the South American flora. With the exception of the Echeveria, the pictures are from specimens in my herbarium.

The novelties here described fall in the genera Rynchospora (p. 200), Echeveria (p. 200), Chamæcrista (p. 202), Grimaldia (p. 203), Passiflora (p. 205).

† **Rynchospora Baileyi,** Britt. sp. nov. Fig. 103.

Culmi cæspitosi ad 1 m. alti: folia longissima, 3 vel 4 facientia involucrum longisimum: spiculi numerosi, obtusi, in spisso a termino capite.

"Perennial by stout rootstocks; culms clustered, rather slender, stiff, trigonous, up to 1 m. high: leaves elongated, smooth, 2-4 mm. wide, those of the involucre 3 or 4, similar to the lower ones, one of them sometimes as long as the culm: spikelets oblong, obtuse, numerous, glomerate in a terminal brownish head 1-1.5 cm. in diameter; scale ovate-oblong, puberulent, abruptly apiculate.

"Near Ciudad Bolivar (Mariqueta), on the Orinoco, Venezuela (L. H. Bailey and Ethel Zoe Bailey 1372). Collected Feb. 27, 1921, in the dry season, in flower only. Related to *R. longibracteata,* Boeckl."—*N. L. Britton,* MS.

† **Echeveria venezuelensis,** Rose, sp. nov. Fig. 104.

Caudex fere 1 dm. longus: folia 12-18 rosulata, oblanceolata, ad 8 cm. longa: pedunculi florentes ad 4 dm. longi, subter foliosi: flores numerosi in racemo equilaterali, subviolacei, petala erecta.

"Glabrous, caulescent, 1 dm. or so long crowned with a rosette of 12 to 18 leaves: leaves fleshy, oblanceolate, 8 cm. or less long, cuneate at base, acute at apex, pale green, more or less glaucous especially beneath, the margins more or less incurved especially when young: flowering stem 3 to 4 dm. long, erect, the lower half bearing closely set leaves borne nearly at right angles to it similar to those in the rosettes but smaller: inflorescence a many-flowered equilateral raceme, 2 to 3 dm. long; bract narrow, 10 to 15 mm. long, acute, subtending the flowers, becoming free at base and then only attached to the under side of the pedicel; bractlets 2, borne on opposite sides of the pedicel, narrow; pedicels 5 to 7 mm. long, spreading: calyx-lobes cleft nearly to the base, somewhat unequal, 6 to 8 mm. long, ovate-linear, acute, glaucous, purplish green, at first erect, in anthesis widely spreading, then erect again; corolla bud ovoid, 5-angled, acute,

when open 10 mm. long, pinkish; petals erect, the tip acute and a little spreading; filaments included, 10, 5 free and 5 borne on the petals; ovary erect, the styles short, purplish; scale at base of capsule broad and low.

"Collected at Los Chorros, above Dos Caminos, altitude 900 meters, about 12 miles east of Caracas, Venezuela, March, 1913 by H. Pittier (no. 5932); type in U. S. National Herbarium, sheet no. 1,420,623.

"This is the second species reported from Venezuela. The other one, *E. bracteolata*, has the flowers in secund racemes and is otherwise different."—*J. N. Rose*, MS.

Collected independently by L. H. and Ethel Zoe Bailey in sun on cliffs at Los Chorros, near Caracas, Venezuela, Dec. 27, 1920 (no. 478), and determined

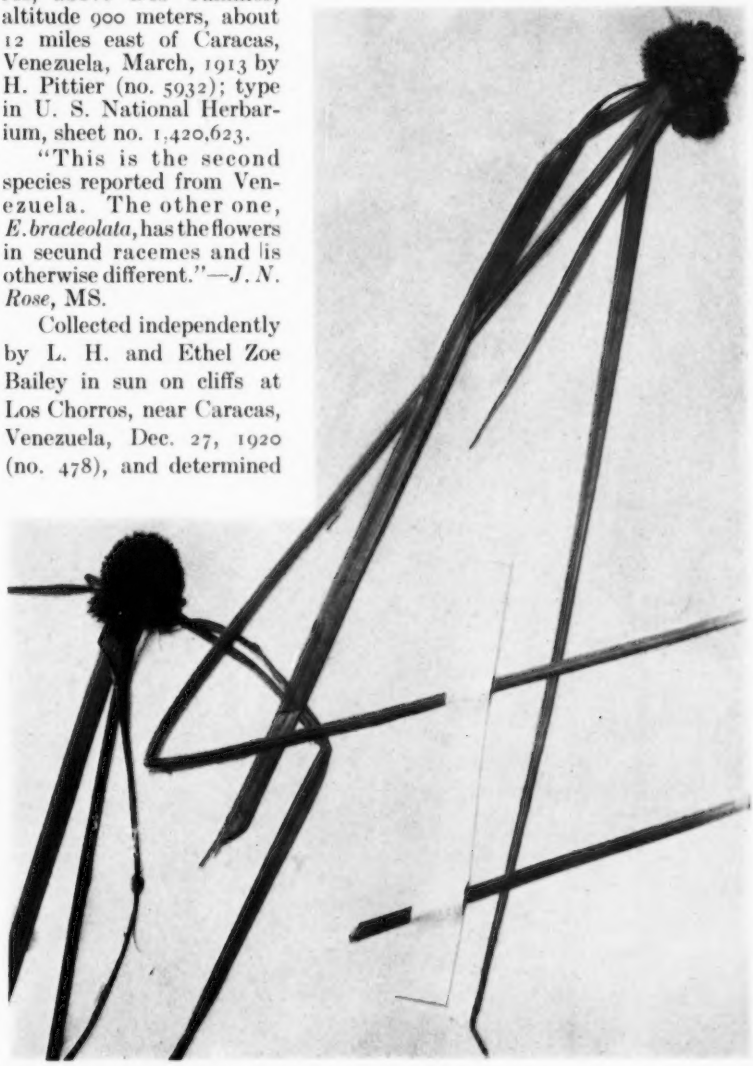

FIG. 103. A NEW VENEZUELAN SEDGE.—*Rynchospora Baileyi;* natural size.

by Rose, flowers ticketed "red-yellow." The species was grown at Washington (presumably from Pittier's material), and Fig. 104, from a photograph left by Rose, represents part of a plant in a pot.

FIG. 104. ECHEVERIA VENEZUELENSIS.—(× about ½)

† **Chamæcrista Baileyorum,** Rose, sp. nov. Fig. 105.

Suffruticosa, ad 6 dm.: foliola 8-12 para, angusto- oblonga ad 12 mm., apiculata: flores flavi pallidique, in pedicellis gracilibus: fructus angusto-oblongus, ad 5 cm. longus.

"Frutescent, 4 to 6 dm. long, much branched, more or less appressed pubescent; stipules linear, 8 to 10 mm. long; gland on the petioles sessile, large, often cup-shaped; leaflets 8 to 12 pairs, narrowly oblong, 9 to 12 mm. long, apiculate, glabrous on both sides but with the margin ciliate, its midrib nearly central: peduncle superaxillary, short, sometimes 8-flowered; bracts long-acuminate; pedicels slender, sometimes 3 cm. long in fruit: sepals narrow 6 to 7 mm. long, acuminate, hairy on the back; petals yellow, 15 mm. long; fruit linear-oblong, 4 to 5 cm. long, 5 to 7 mm. broad.

"Collected by L. H. Bailey and Ethel Zoe Bailey on Morro da Viuva, in Rio de Janeiro, Brazil, March 8, 1924 (791): ticketed subshrub, flowers yellow.

"This seems to be the plant which Bentham describes and figures (Flora Bras. 15.2: 172. pl. 45. f. 2. 1870) as *Cassia chamæcrista brasiliensis*, but it is clearly specifically distinct from *C. chamæcrista*. Bentham refers

FIG. 105. A NEW CHAMÆCRISTA—*C. Baileyorum*, nearly natural size.

to this variety as a synonym *C. hypnotica*, Vell., but it is certainly not the plant he illustrated (4: pl. 75) nor can it be *C. gemini*, Vell. (4: pl. 74)."—*J. N. Rose*, MS.

† **Grimaldia Baileyorum,** Britt. & Rose, sp. nov. Fig. 106.

Suffruticosa, prostrata, glanduloso-hirsuta: foliola in duobus paribus, orbicularia vel brevi-oblonga ad 10 mm. longa: flores flavi, in longa inflorescentia; stamina 10; fructus hirsutus, ad 3 cm. longus.

"A prostrate undershrub, with spreading branches 3 to 4 dm. long, clothed with short glandular hairs and long hispid hairs throughout: stipules small, deciduous; petioles slender, 10-12 mm. long; leaflets 2 pairs,

FIG. 106. A NEW GRIMALDIA, one of the Cassia segregates.—*G. Baileyorum* (× 5/6).

small, orbicular to short-olbong, 7-10 mm. long, rounded at apex, oblique at base, pubescent on both sides and more or less viscid; inflorescences elongated, 4-8 cm. long, somewhat paniculate, more or less viscid; flower-buds obtuse, pilose; petals yellow, 1 cm. long, obtuse; stamens 10; pod 2-3 cm. long, somewhat viscid and with long yellow hairs.

"By Rio Mariqueta near Ciudad Bolivar on the Orinoco, Venezuela, February 27, 1921 (L. H. Bailey and Ethel Zoe Bailey 1392): ticketed prostrate glutinous undershrub."—*Britton & Rose*, MS.

† **Passiflora fœtida** subsp. **orinocensis,** Killip, subsp. nov. Fig. 107.

Glabra sed glanduloso-viscosior: folia hastata cum parvis lobis basalibus: fructus magnus rubusque.

FIG. 107. AN ORINOCO PASSIFLORA.—*P. fœtida* subsp. *orinocensis.* About two-thirds natural size.

"Plant glabrous throughout: petioles glandular-viscous: leaves averaging 6 cm. long, 4.5 cm. wide, hastate (middle lobe: lateral lobes, 4:1; middle lobe lanceolate, acuminate, the lateral lobes semicircular in general outline), cordate, sparingly glandular-punctate beneath, irregularly glandular-denticulate: bracts 2.5 to 3 cm. long, viscous, bi- or tripinnatisect, the ultimate segments not closely interwoven: fruit about 3 cm. in diameter, red.

"Type in the U. S. National Herbarium, no, 1,059,996, collected near Ciudad Bolivar, Venezuela, on Isla Degrero, in the Orinoco River, March 6, 1921, by L. H. and Ethel Zoe Bailey (no. 1773).

"*Passiflora foetida*, L. is an extremely variable species. Many of the variants seem sufficiently well marked to constitute subspecies. *Passiflora foetida orinocensis* belongs to the small group of glabrous plants with large red fruits, *P. foetida ciliata* being its nearest relative. From this it differs in having more reduced basal leaf lobes and in the petioles, bracts, and under surface of the leaves being more viscous."—*E. P. Killip*, MS.